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EXAMINER

TRAN, TRANG U

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed December 15, 2010 have been fully considered but they are not persuasive.

In re pages 2-9, Applicants argue that Hu fails to disclose “matching, by execution of a computer system, sub-field/frame elements of a test video field/frame with corresponding sub-field/frame elements of at least one reference video field/frame, and thereby, generating for the test video field/frame a matched reference field/frame comprising the sub-field/frame elements of the at least one reference video field/frame which match to the sub-field/frame elements of the at least one reference video field/frame which match to the sub-field/frame elements of the test video field/frame; and positioning, by execution of the computer system, in the matched reference video fields/frame at least one of the matching sub-field/frame elements to compensate for misalignment between at least one of the sub-field/frame elements of the test video field/frame and the at least one matching sub-field/frame elements,” as required by independent claim 1 and its dependents and “matching sub-field/frame elements of a test video field/frame, and thereby generating for the test video field/frame a matched reference field/frame comprising the sub-field/frame elements of the at least one reference video field/frame which match to the sub-field/frame elements of the test video field/frame; and shifting, by execution of the computer system, relative to the matched reference field/frame at least one of the matching sub-field/frame elements to compensate for misalignment between at least one of the sub-field/frame elements of

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the test video field/frame and the at least one matching sub-field/frame elements,” as required by independent claim 17 and similarly required by independent claim 20, as well as their respective dependents because the interpretation of “affecting a sub-field/frame element as affecting a sub-field or frame element” would be (A) completely inconsistent with the other explicit words of the claims and context thereof, and (B) completely inconsistent with the explicit teaching of the specification.

In response, the examiner respectfully disagrees. Hu discloses in from col. 2, line 50 to col. 3, line 20 that

“In FIG. 2 the reference and test images 24, 26 are shown having some texture 25, i.e., not a matte image. As shown in the test image after processing the texture 25 has been shifted horizontally and/or vertically. An arbitrary test region or block 28 is formed, shown in this example as a rectangle, having a reference and test images. For a rectangle as shown the reference point and horizontal and vertical extents  $\Delta X$ ,  $\Delta Y$  define the test region or block 28. The test region 28 is located where there is substantial texture 25 in the images.

A high precision sub-pixel spatial alignment algorithm is shown in FIG. 3. An initialization module 30 provides the corresponding reference and test images together with a test block to a correlation measurement module 32. The first step 34 in the initialization module 30 controls the video capture module 16 to capture corresponding reference and test images together with a test block to a correlation measurement module 32. The first step 34 in the initialization module 30 controls the video capture module 16 to capture corresponding reference and test images or frames from the reference and test video signals. The second step 36 establishes a test block for overlaying on the respective images in an area that has significant texture 25. The first step 38 of the correlation measurement module 32 applies a fast Fourier transform (FFT) to the **pixels of the images that lie within the test region**. A cross-correlation step 40 is then performed in the FFT domain.

$$\text{FFT}(\text{corr}) = \text{FFT}(\text{ref}) * \text{FFT}(\text{tst})$$

FFT-1(corr) produces **correlation coefficients for every shift point within the test region**, which may be represented in the form of a surface 42 as shown in FIG. 4. The position of a peak 44 in the surface 42 indicates the amount of shift in position between the reference and test images. A curve-fit step 46 provides a nearest integer pixel shift position for the peak 44 based upon the coefficients for

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the peak position and the positions up, down, left and right from the peak position. The pixel shift position from the correlation measure module 32 is input to an update sift position step 48. For the first iteration only the nearest integer pixel shift position is used.”

From the above passages, it is clear that the alleged “plurality of sub-frame elements of a test video frame” is anticipated by the pixels of the images that lie within the test region (or block) or every shift point within the test region (or block).

Additionally, interpreting the alleged “plurality of sub-frame elements of a test video frame as pixels of the image that lie within the test region or every shift point within the test region is the broadest reasonable interpretation consistent with the specification.

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang U. Tran whose telephone number is (571) 272-7358. The examiner can normally be reached on 9:00 AM - 6:30 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Jefferey F. Harold can be reached on (571) 272-7519. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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January 18, 2011

/Trang U. Tran/  
Primary Examiner, Art Unit 2422